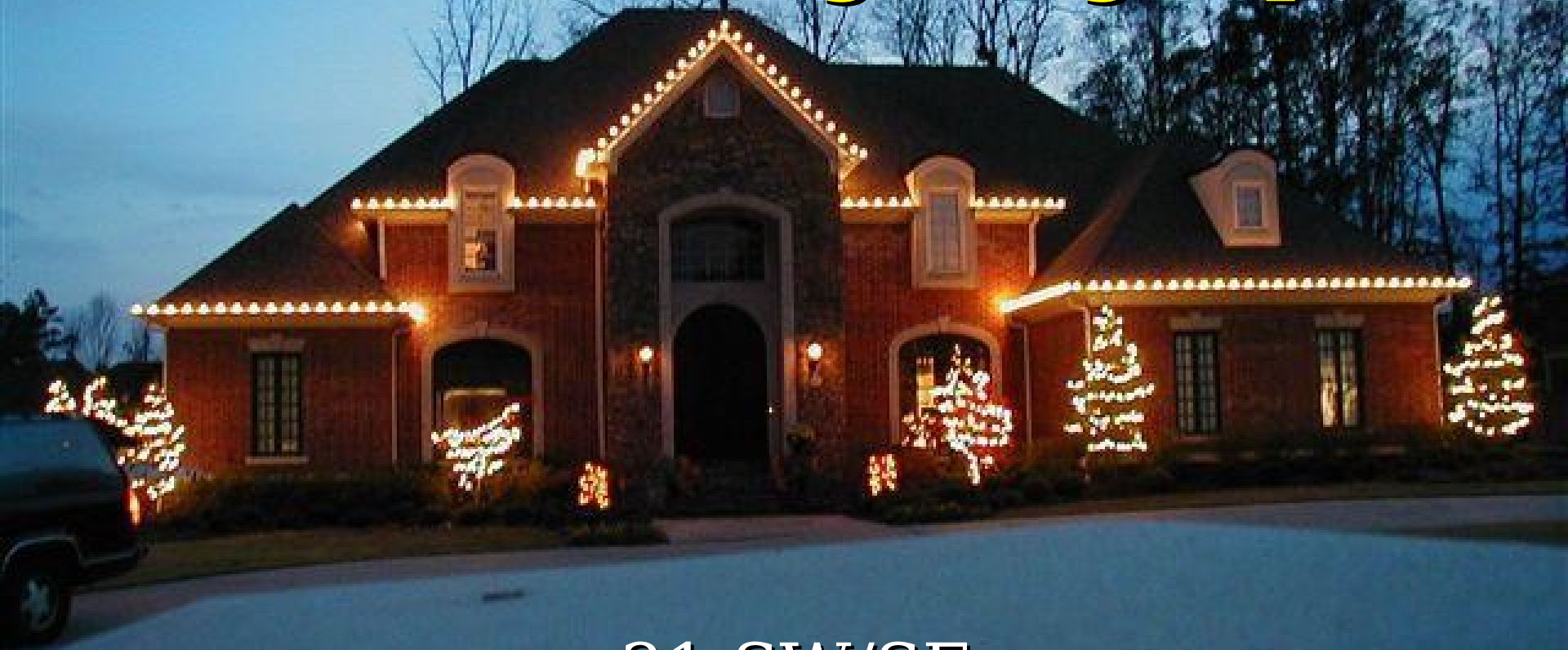


HOLIDAY SAFETY

Christmas Lighting Tips



21 SW/SE
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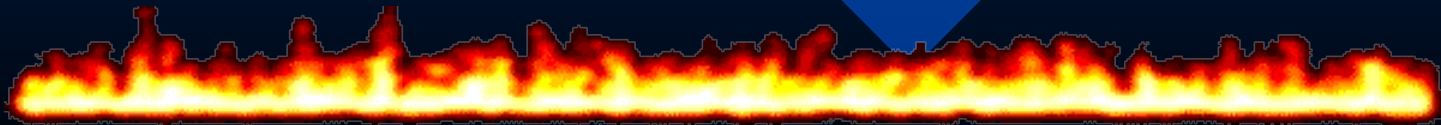
Overview

- Holiday Safety Statistics
- Christmas Tree Safety
- Extension Cord Safety
- General Lighting Safety
- Installation Safety
- Conclusion



The Stats

- 8,700 people injured each year
 - Falls
 - Cuts
 - Shocks
- 400 fires annually
 - 20 deaths
 - 70 injuries
 - \$15M in property loss and damage



Christmas Tree Safety

- NEVER use candles to decorate trees
 - Unsafe practice of the past, but still done for tradition's sake!
 - If you must do it....never leave unattended
- Water cut trees daily
 - Rule of thumb: 1 qt water per 1" diameter per day (initially)
 - Dispose of tree immediately after season ends before the needles dry out
- NEVER place near heat source
 - Space heater, fire place, radiators, etc.



Tree Safety Continued

- Artificial trees
 - Look for “Fire Resistant” label
 - » May still catch fire, but will resist burning and extinguish quickly
 - NEVER use electric lights on metallic tree
 - » Faulty lights may charge the metal
 - » Electrocution may result
- Use “Non-tip” style tree stands
- Avoid lead-based decorations
 - Hazardous to children if ingested



Extension Cords

The Boring But Essential Basics

- Use only UL or FM approved
- Always INSPECT for damage
 - Look for damaged insulation, splices, or loose plugs
- Never run through doorways or under rugs
 - Insulation can become damaged
 - Potential fire or shock hazard
- Match plugs with outlets
 - Never force a 3-prong plug into 2-prong socket
- Store cords indoors when not in use
 - Outdoor conditions can deteriorate cord over time

Extension Cord Safety

Important Usage Tips

- Never use indoor cords outdoors!
- Know cord rating and total load placed on it!
 - Cord gauge based on American Wire Gauge (AWG) system
 - The larger the wire, the smaller the AWG #
 - A 12 AWG cord can power more than 14 AWG
- Sample cord ratings (always read cord label):
 - 18 AWG – 8 Amps
 - 16 AWG – 13 Amps (typical outdoor lawn cord)
 - 14 AWG – 15 Amps
 - 12 AWG – 20 Amps (industrial applications)

Extension Cord Safety

Did You Know?

■ Cord Length

- A cord, based on its gauge, can power a certain wattage at specific distances

» **As the cord gets longer, the current carrying capacity of the cord gets lower**

- A 16 gauge cord **less than 50'** will power 1625W

- **Over 50' cord length good for only 1250W!!**

"Hey, it reaches...I found the right cord!"

Wattage Calculations

Safety through Knowledge!

- Alright, Clark.....that's a lot of Christmas lights!
- ALWAYS be aware of power being used by your light display
 - Most smaller displays stay well within the limit of cord ratings
 - But.....how close are you to passing the threshold and have you ever known?
- Consider replacing larger bulbs that burn hotter with cooler burning miniature lights

Power Conversions



- $\text{Watts} = \text{Volts} * \text{Amps}$
- $\text{Volts} = \text{Watts} / \text{Amps}$
- $\text{Amps} = \text{Watts} / \text{Volts}$

- Many Christmas light products vary in regards to power ratings provided
 - Some lights give rating in watts, while others may indicate amps
 - Regardless, know the rating and how to convert into something useful



Power Calculations

- Most larger bulbs list power draw in watts
- For example, the larger C-7 bulbs typically pull 5 watts per bulb
- Simply count the number of bulbs and multiply by wattage value
 - $250 \text{ C-7 bulbs} * 5\text{W/bulb} = 1250\text{W}$
- A 16AWG cord will support, but....
 - Don't forget about cord length, deterioration, and other factors

Power Calculations



- Don't overlook power draw on smaller light sets
 - Mini-lights are touted for their efficiency and low-cost power usage
 - Be cautious of the math!
- A standard mini-light set of 100 lights uses 40 watts (about .34 amps)
 - A large outdoor tree decorated with minis may use up to 2,000 lights (800W)
 - If powering this tree on same cord as house decorations, you can easily overload the cord and/or outlet

Cords - A Few Basic Tips

- If in doubt, simply feel the cord after power has been applied for 20-30 minutes
 - If it's warm to the touch, decrease the load!
- Use of an Amp Clamp to measure exact loads is safest method
- Avoid “daisy-chaining” multiple cords and light strands
 - Not because OSHA frowns on it, but because you will run a higher risk of fire, overload, etc.
- Keep it Simple. Keep it Safe.

General Lighting Safety

- Use only lights tested by recognized testing laboratory (ie. UL approved)
- Check light strands for broken sockets, frayed or bare wires, or loose connections
- NEVER use indoor lights outside
 - Green label = indoor use; Red = outdoor
- Turn off all lights when you go to bed or leave the house
- For added shock/electrocution protection
 - Plug lights into circuits protected by Ground Fault Circuit Interrupters (GFCI)



Installation Safety

- Avoid using tacks, nails or metal staples to secure light strands
 - Use insulated staples
 - Pre-installed hooks are safe and convenient
- Install lights without power/unplugged
 - Avoids shock if you touch overlooked exposed wire
- Fasten outdoor lights securely to protect from wind damage

Installation Safety



- Fall Protection
 - Various types
 - Use for working heights > 10 feet
- Ladder Safety
 - Inspect and use ladder appropriate for the job
 - Visit <http://siri.uvm.edu/ppt/laddertalk> for more
- Eye protection
 - Wear safety glasses when decorating trees
 - Scratched corneas hurt!

Fact or Fiction

- Never plug more than 3 light strands into one extension cord? **FICTION**
 - Not sure where this “rule of thumb” common to lighting safety originated, but it’s out there
 - A standard rule has always been not to plug more than 3 light strands together (mini lights, icicle lights, etc.) to avoid overloading the strand wire themselves
 - Newer, heavy duty light strands now allow as many as 6 strands to be plugged in sequence
 - May be an over simplistic rule to prevent “daisy-chaining” (ie. running multiple 3-light strands into one cord using 3-outlet cube taps)

Fact or Fiction

- Indoor cords are not rated the same as Outdoor extension cords? **Fact and Fiction**
- The typical brown or white indoor extension cord commonly used in the home is rated at 16 AWG
 - The same as a common outdoor cord used to power such items as weed eaters, small tools, etc.
- What's the difference?
 - Outdoor cords are 3-wire with neutral to ground
 - Outdoor cords are better insulated to handle outside wear/tear

Conclusion

- Follow basic tree and lighting safety guidance
- Know the load being placed on extension cords
- Get help from a qualified electrician if needed
- Have fun while decorating.....SAFELY!

HAPPY HOLIDAYS